Dr Gretna Margaret Weste AM

5 September 1917 – 30 August 2006

Last year a long-standing and generous contributor to the FNCV died – Dr Gretna Weste, a Club member from 1978 until she left Victoria in 2003 to live near her daughter in Tasmania. Before leaving, Gretna contributed to my historical investigation of The University of Melbourne's Botany School, with which she had an even longer association. Because we were discussing her pre-1975 work, I didn't ask her why she joined the FNCV in 1978, something I now regret.

In hindsight, joining the FNCV seems entirely appropriate for someone with Gretna's interests and expertise. In the 1970s she was helping an amateur naturalist describe fungi, and teaching and researching in the Botany School, during which undergraduate excursions took her to Wilsons Promontory, and her research took her to dying patches of Victoria's diverse heathlands, woodlands and forests. Gretna was on a quest – to understand the ways and wiles of a destructive plant pathogen – and this required an ecological understanding of the bush it invaded. Her interest in and love of the bush was shaped by her childhood and university experiences, bush-walking, and perhaps her forester husband. Her parents, Arthur and Grace Parkin, took her bush-camping and encouraged her love of plants and the bush; and, although their names do not appear in FNCV membership lists, Gretna claimed to have enjoyed FNCV shows and meetings as a child. No wonder she joined the FNCV. By 1978 her three children were well and truly independent adults, and, sadly, her husband had died.

World War 1 was responsible for Gretna's Scottish birth and name. In 1917 her scientist father was working in the new, War-provoked munitions factory, 'H.M. Factory Gretna', near the Scottish border town of Gretna. At the end of the War, the Parkin family returned to Victoria, where Gretna grew up on the edge of suburbia in Surrey Hills. During the Depression, a scholarship allowed her to complete her secondary education at Methodist Ladies' College in Hawthorn. In Victoria's Leaving examination in December 1934 she gained the Exhibition (top marks) in botany and first-class honours in enough subjects to win a government scholarship to Melbourne's only university in 1935.

During her honours-studded science degree course at the University of Melbourne, Gretna studied botany under several FNCV members. Dr Reuben Patton taught plant taxonomy and ecology, and Associate Professor Ethel McLennan taught mycology and plant pathology. Professor Alfred Ewart was also a FNCV member. Gretna was in his last Botany Part III class – in her third year in 1937. Ewart died just before Gretna presented her talk on a topic of little interest to her (soil pH measurement), thereby sparing her his usual scathing criticism. Gretna Parkin shared the exhibition in Botany Part III, and in April 1938.graduated BSc.

A Howitt Natural History Scholarship allowed her to undertake research for the University's MSc degree in 1938. In the Division of Forest Products of CSIR (later CSIRO) she investigated the 'tension wood' formed in response to bending in Australian hardwood trees, her foundation investigations gaining her the nick-name 'Gelatinous Gretna', due to the gelatinous layer inside the tension wood. In the spring of 1938 Gretna and other members of the Botany School helped to introduce Ewart's newly-arrived successor, Professor John Turner, to Australia's tall flammable forests beyond Marysville.

And then came the January 1939 bushfires and World War II.

Early in 1939 Gretna Parkin gained first-class honours and shared the MSc exhibition in the Botany School, and was appointed a research officer in the Forests Commission of Victoria (FCV). Or so the paper-work of her appointment led her to believe. She investigated the problem of preserving the timber of the huge numbers of trees killed but not incinerated in the 1939 fires. Unlike her research officer col-

Gretna Parkin working in the Forests Commission of Victoria Laboratory in 1940. Photo courtesy of Sandra Heard née Weste.

leagues, all of whom were male, her salary did not increase incrementally, so she appealed to the Public Service Board, whose investigation of her research reports and typewriter-free laboratory somehow concluded that, as a woman, her classification and salary were those of a temporary typist. And that was that. Her research led to the FCV's policy of keeping salvaged timber sprayed with water, but her mycological paper on wood-rotting fungi on living forest trees was not published.

In December 1941 Gretna married Geoff Weste, a Creswick-trained forester, and, since married women were then not tolerated in the Public Service, she had to resign from the FCV. Fortunately marriage was not an explicit barrier to university women, and Professor Turner welcomed her back in the wartime-depleted Botany School in 1942, to continue (on a Commonwealth Research Scholarship) work he claimed was of national importance – her research on the pathology and preservation of timber salvaged after the 1939 fires.

In 1961, after two decades of family responsibilities and some school-teaching, Gretna was again welcomed back in the Botany School to teach increasing numbers of botany students in the 1960s. Beginning as a senior demonstrator, she also undertook research in plant pathology, and was soon lecturing as well as demonstrating in plant pathology and first-year biology. In August 1969 lecturer Weste was awarded a PhD degree for her agriculturally-important thesis on a fungal disease of wheat. That year two timely events redirected Dr Gretna Weste's research focus to Victoria's indigenous vegetation – the decision to transfer University agricultural plant pathology across the System Garden to the Agriculture School, and the detection of symptoms of a non-agricultural pathogen in the Victorian bush. Frank Podger, who had recently shown that the devastating dieback in Western Australia's precious Jarrah *Eucalyptus marginata* forests was due to *Phytophthora cinnamomi*, accompanied Gretna's ecologist colleague, Dr David Ashton, on a botanical excursion to the Brisbane Ranges, where they noticed symptoms which were later confirmed to be due to *P cinnamomi*. This was the first record of the disease in the Victorian bush, having probably reached the Brisbane Ranges during road-construction in the 1960s.

And so Dr Weste transferred her research gaze from an agriculturally-important soil-borne pathogen to one which devastates Australian indigenous ecosystems. In the Botany School she taught science and forestry undergraduates about interactions between micro-organisms and plants, and

Dr Gretna Weste pointing out an unusual Grass-tree she spotted in the Mary D White Heathland Reserve during an excursion with Friends of Angahook-Lorne State Park in February 2000. Later identified by Neville Walsh as *Xanthorrhoea cæspitosa*, it was a new record for the Anglesea district. Photo courtesy of Margaret MacDonald.

supervised post-graduate research projects on diverse aspects of *P. cinnamomi* in the bush. Although *P. cinnamomi* was commonly known as 'cinnamon fungus' because of its initial discovery on cinnamon trees, with its motile (swimming) zoospores, it is more closely related to certain algae than fungi. Unfortunately this alien micro-organism has been found to be a virulent, root-invading pathogen of numerous Australian plants, its degree of destruction being influenced by the antagonistic activity of soil microbes. Also unfortunately, Australian nutrient-poor soils and gravels invariably lack sufficient micro-organisms to combat *P. cinnamomi*.

Dr Weste officially retired as Reader in 1982; in March 1984 the University of Melbourne honoured the foremost authority on the biology of *P. cinnamomi* in Australian ecosystems with a DSc degree for her published research papers; and in 1989, she was made a Member of the Order of Australia (AM) 'For service to science, particularly in the field of botany'. Beyond all these, Gretna and her research students continued to study the physiological and ecological consequences of *P cinnamomi*. For more than three decades, beginning with Victoria's rather wet growing season of 1970–71, which favoured its zoospore-led dispersion, they followed its fate and fancies in forests, woodlands and heathlands in the Brisbane Ranges, Wilsons Promontory, Grampians and East Gippsland.

These long-term studies have revealed the pathogen's *modus operandi*, the susceptibility of thousands of Australian host species, and the cyclic nature of the infestation. By continuously monitoring vegetation in permanent quadrats in diseased and disease-free areas, they have documented the changing face of the disease. With the dieback and death of susceptible trees and shrubs (with the conspicuous evidence of dead Grass Trees *Xanthorrhoea australis*, noticed by so many field naturalists), drab, resistant vegetation (such as sedges) gradually replaces diverse, colourful, insect-, bird- and animal-attracting susceptible species (like peas, heaths and grevilleas) in

heathlands and shrubby understoreys. Then, decades after the initial infestation of *P. cinnamomi*, its density and distribution may decline, with the co-incident reappearance of susceptible trees and understorey species.

In the 1990s they recorded a welcome recovery on Wilsons Promontory – the reappearance of *X. australis* and Saw Banksias *Banksia serrata* on the northern slopes of Vereker Spur near the junction of Millers Landing Track and Five Mile Road. Dr Weste first noticed dieback there in 1970 (during a university botany excursion), probably originating from contaminated soil on a bulldozer brought in to help fight bushfires in 1962 and offloaded in a gravel pit. The disease was dispersed by the 'dozer, and subsequently by the use of infested gravel on roads and tracks, and by zoospores swimming after rain.

Dr Weste represented the Botany School on the Conservation Council of Victoria, and submitted botanical evidence to Victoria's Land Conservation Council. She was a foundation member of the Australian Conservation Foundation, and a member of numerous groups, including the FNCV, Victorian National Parks Association, Environmental Studies Association of Victoria, Friends of Warrandyte State Park and of the 100 Acres in Park Orchards, Montrose Environment Group, the Ringwood Field Naturalists Club, and the Maroondah branch of the Society for Growing Australian Plants (now Australian Plants Society).

In 1990 Dr Weste undertook a comprehensive investigation of the risk posed by *P. cinnamomi* to endemic plants throughout Australia for the new Endangered Species Unit of the Australian National Parks and Wildlife Service (ANPWS). Having just published the revised edition of *Rare or Threatened Australian Plants* (1988), the ANPWS did not publish her report on this particular biological risk to them, but did use information from her report. Further research by Weste and co-workers on rare and endangered species in the Brisbane Ranges and Grampians (Gariwerd) National Parks, has revealed the alarming news that over a dozen endemic species are not only susceptible to *P. cinnamomi* but are also at risk of consequent extinction. The ecological threat of *P. cinnamomi* to Australian biodiversity is now officially acknowledged. 'Dieback caused by the root-rot fungus (*Phytophthora cinnamomi*)' is now listed as a 'Key Threatening Process' under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

A foundation member of the Australasian Plant Pathology Society (APPS), Dr Gretna Weste was an executive member of the International Society of Plant Pathologists' Committee on *Phytophthora*, and chaired the Organising Committee of the Society's 4th International Congress of Plant Pathology, which was held in Melbourne in 1983. She was also a plant pathology research group leader in the International Union of Forest Research Organisations. In the 1990s she was made an Honorary Member of the APPS and Patron of the new Australasian Mycological Society.

Gretna's mycological activities included a productive collaboration with an amateur mycologist and long-standing FNCV member, Gordon Beaton. While Gordon collected, identified, described and illustrated small cup-fungi (Discomycetes) and other fungi, Gretna prepared their descriptive papers for publication. Their 20 joint papers, published from 1976 to 1984 in the *Transactions of the British Mycological Society*, include type descriptions of Australian fungi. *The Victorian Naturalist* (1978–80) carries five of their papers on Victorian fungi and Weste's obituary for Beaton in 1988. Gretna participated in the fungal forays, workshops and conferences of Fungimap, the realisation of Dr Tom May's 1995 suggestion to the FNCV's Botany Group of a mapping scheme for Australian fungi. At the 3rd Fungimap conference in Gowrie Park, Tasmania, in 2005, with her usual generous enthusiasm, Gretna helped professional and novice participants alike in their pursuit of fungi.

Undeterred by hip replacements and the occasional broken bone, Gretna continued to hike through the world's national parks and wilderness areas into the 21st century. With humour, hand lens and camera at the ready, she marvelled at the beauty as well as the ecology of landscapes and their plants and fungi. From the 1970s she

shared her biological wisdom and wonderment during engaging talks and enthusiastically–led excursions for the FNCV and other conservation groups, and founded and led walks for the Melbourne University and Alumni Bushwalkers

The patient, perceptive and persistent investigations of *P. cinnamomi* by Dr Gretna Weste and her students show the huge importance of sustained scientific research for the understanding and management of ecosystems and their pestiferous invaders. They have documented and explained the physiological and ecological destruction caused by this alien microorganism that poses such a threat to Australia's biodiversity, and which, in our careless ignorance during road-works, logging and mining, we humans have introduced into Australian ecosystems.

Gretna leaves a substantial legacy of ideas and information – in the busy minds of her former research students and in her published papers, including over 100 papers on *Phytophthora cinnamomi*, in Australian and international journals such as the *Australian Journal of Botany*, *Australasian Plant Pathology*, *Phytopathology Zeitschrift*, *Phytophthora Newsletter* (lnternational) and, of course, *The Victorian Naturalist*. The following four papers provide an overview of her protracted study of this destructive pathogen in the Victorian bush:

The cinnamon fungus. ls it a threat to Australian native plants? *The Victorian Naturalist* (1993) **110**, 78–84.

ls dieback declining? The threat of *Phytophthora cinnamomi*. *The Victorian Naturalist* (1997) **114**, 216–221.

Dieback at Wilsons Promontory. Is the battle won? *The Victorian Naturalist* (1998) **115**, 331–336.

Dieback threatens endangered native plants [in the Grampians]. Will they survive? *The Victorian Naturalist* (2004) **121**, 148–153.

And you might like to read her autobiographical 2005 Daniel McAlpine Memorial Lecture, 'A long and varied fungal foray', in *Australasian Plant Pathology* **34**, 433–437.

1 thank Sheila Houghton, Gary Presland, Jason Benjamin, Jane Ellen, Tom May, Lorraine Gale, Marion King and Jean Galliott for their help.

Linden Gillbank
School of Social and Environmental Enquiry
The University of Melbourne
lindenrg@unimelb.edu.au

One Hundred Years Ago

POPULAR NAMES FOR NATIVE PLANTS - Following up the suggestion made in a paper read before the Field Naturalists' Club some little time ago, a sub-committee has been appointed to see what can be done towards compiling a list of popular names for our commoner native plants. The first step is, of course, to get as many lists of names as possible from observers in various parts of the state, and with that view the sub-committee requests all interested, especially teachers, who, perhaps, have better opportunities than others, to forward any names they may know of to Dr. C.S. Sutton, Rathdown-street, North Carlton, who has kindly consented to act as secretary to the movement. It is not to be expected that this work will be accomplished in one season, but, if started at once, it will not be long before a satisfactory foundation can be laid for future work, which, it is hoped, will include the publication of a Floral Calendar for the State. Parcels of dried specimens, with local names attached, may be forwarded to the care of Mr. J.A. Leach, M.Sc., Training College, Carlton.

From *The Victorian Naturalist* **XXIV** p 85, September 5, 1907